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Research Paper

Nature of Relationship between Naturalistic Intelligence and Pro-Environmental Behaviour of Adolescent Students: An Empirical Analysis

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ABSTRACT

Global scientific research consistently demonstrates that human behaviour has a different impact on the health of the environment. Climate change, habitat loss and environmental degradation over the years have all been linked to lifestyle choices such as lacking of recycling, overuse of resources. Scientist and psychologists alike have argued that conservation efforts should center on changing human Behaviour. Despite the clear link between human Behaviour and environmental crisis, psychological strategies aimed at promoting pro-environmental Behaviour. Educational psychologists Howard Gardner's theory of multiple Intelligence (MI) has been used to explain variations in human Behaviour, such as interest in natural phenomenon. Various studies have proposed that high naturalistic intelligence could predict engagement in pro-environmental Behaviour. In this context the present study analyzed the relationship between Naturalistic Intelligence (NI) and engagement in pro-environmental Behaviour (PEB) among the adolescent students of West Bengal. Quantitative survey method and descriptive study has been applied involving 106 students of adolescent age group residing in urban and rural areas of West Bengal. Tools used were standardized scale of Naturalistic Intelligence certified by National Psychological Corporation (ISO 9001:2008) and a tool for assessing Pro-environmental Behaviour was constructed following standardized procedures having four dimensions. Results revealed greater naturalistic intelligence among students of rural school but higher exhibition of pro-environmental Behaviour in students of urban schools. However, this study has not highlighted on the significant relationship between naturalistic intelligence and pro-environmental Behaviour. It suggests the necessity of special provisions and orientation sessions in rural schools for engaging in pro-environmental Behaviour since childhood. The study also suggests incorporation of environmental education as a compulsory subject in curriculum from early ages so that teachers can instill in their students' environmental sensibilities.

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Keywords: *Multiple Intelligence, Naturalistic Intelligence, Pro-environmental Behaviour, Curriculum*

Human activities have been harmful and cause changes to the environment. Environmental problems and accelerating changes in living conditions have become a fundamental part of the world in general and metropolis in particular. In modern times environmental degradation has become a global issue and any adverse change in the environment would affect humans. The quality of our Earth has degraded to such an extent that saving the Earth is the need of the hour would be an understatement. Man have already damaged it beyond repair and merely all natural resources are now polluted in due to his greed, selfishness and ruthless activities. Aligning with the Sustainable Developmental Goals, we must try to curb the damage to the environment or perhaps even reverse some of our deleterious actions. Many studies have shown that though environmental damage is caused by human activities, nevertheless humans are the main managers of the environment with the ability and expertise to manage the environment and utilize the existing resources on an ongoing basis (Koger et al.,2013). In the present millennium, environmental degradation is a matter of great concern before mankind. Many of these problems are rooted in human Behaviour (DuNann Winter and Koger, 2004; Gardner and Stern, 2002; Vleg and Stek, 2009) and can thus be managed by changing the relevant Behaviour so as to reduce its environmental impacts. Ecological sensitivity and exhibition of conscious pro-environmental Behaviour should be inculcated in the young minds from their early phases of training and education. Thus, environmental awareness and pro-environmental Behaviour is an important component of learning for students of all age and especially the peak of grooming phase, adolescents. In this context, for effective management of environment our future generation needs to be urged to live responsibly, consume judiciously and respect the balance of nature that we may irrevocably damage. Students, as one of the elements in the society is expected to be the next generation and the developer to preserve the environment and resources available. Education obtained by students in an Institution will have a positive impact in improving the ability and environmental awareness of students who are studying specifically about the environment and its problems. As young people are the drivers of a sustainable future, environmental education for the young generation (Green, T.L 2013).

Concept of Naturalistic Intelligence: Intelligence was considered as the concept of unity, but over time the concept of intelligence develops into multiple intelligence which can be used to improve intelligence of students focusing on a person's unique way of thinking to solve multiple problems (Amstrong, 2009). Multiple intelligence was first put forward by Howard Gardner in 1983 (Luthfiana, 2018) it being divided into seven types of intelligence namely linguistic intelligence, logical-mathematical intelligence, visual -spatial intelligence, bodily kinesthetic intelligence, musical intelligence, interpersonal intelligence, intra-personal intelligence. While in 1999 Gardner added two new categories which are Naturalistic Intelligence and extensional intelligence Kaiser et al., (1999). Gardner designates Naturalistic Intelligence as the human ability to discriminate among living things (plants, animals) as well as sensitivity to other features of the natural world (clouds, rock configuration). It is the ability to see natural environment well, can create other consequential distinctions in the nature of nature, the ability to understand and enjoy nature and use that ability productively (Kurmur et al., 2008)

Concept of Pro-environmental Behaviour: Pro-environmental Behaviour is defined as human Behaviour "that consciously seeks to minimize the negative impact of one's actions

on the natural and built world" (Kollmuss & Agyeman, 2002). Acting pro-environmentally is associated with mankind's ability to adapt to the human ecological niche (Goleman, 2009). PEB is a practice that promotes resource protection, conservation practice and supports the sustainable use of natural environment (Lee,2011). Steg and Nordlund (2012) reviewed PEB as any action which enhances the environmental quality with or without such intention.

Relationship between Naturalistic Intelligence and Pro-environmental Behaviour: Pro-environmental Behaviour intersects with the human ecological niche and adaptation. Naturalistic intelligence allows humans to become aware of Behavioural consequences in nature and subsequently "adapt" or change their Behaviour in response to environmental degradation (Golman, 2009). According to Vreja and Balan (2018), naturalistic intelligence increases adaptation by recognizing that degraded ecosystems ultimately jeopardize the survival of mankind as a species (Vreja & Balan, 2018). For the naturalist, survival requires interpretation of current ecological health and subsequent engagement in pro-environmental Behaviour (Goleman,2009; McCallum,2008). Mauladin (2013) highlighted that naturalistic intelligence is an intelligence and skill to observe a pattern in nature and understand the natural system and human made systems and people's awareness has been realized as a powerful environmental sphere tool. (Rogayan Jr & Nebrida, 2019) throwing light that environmental destruction and damage can be curbed out only with the responsible Behaviour of humans. Thus, there are various previous studies that indicate a relationship between naturalistic intelligence and the environmental attitude of learners.

Research Background

Previous studies indicate that environmental awareness and pro-environmental Behaviour is low among students. Some review of literature indicate that students rarely engage in environmentally friendly activities such as doing electricity savings or utilizing and maintaining cleanliness of public transportation. There are studies that indicate the low level of environmental awareness of students who hardly think of saving electricity consumption or maintaining the cleanliness of public transportation. Neither are they in the practice of recycling. (Kurmur, et al. 2008). Oguz et al., in his study found that only half of the students do recycle (Oguz et.al., 2010). Pro-environmental Behaviour among students is vital to be implemented from the Education gained by preserving the environment and resources existing on Earth. (Sivamoorthy et al., 2013). Through Education efforts are needed to develop intelligence in students and their sensitivity towards environment. The less maximal Behaviour and environmental awareness on students are likely to occur because of the differences in students' cognitive abilities (Gardner 1998). A detailed analysis needs to be carried out about the relationship between naturalistic intelligence and its effect on pro-environmental Behaviour among students in dealing with environmental problems. It is necessary to ensure that proper Education and intelligence contributes to the positive attitude and pro-environmental Behaviour towards the environment. The importance of Education to trigger a positive outlook and sensitivity towards environment from an early age of school education which can drive the society to a stage of sustainable development in future generations. (Karupagam 2014) conducted survey on influence of Naturalistic Intelligence and Environmental Awareness on teaching science among school teachers the Correlation test of which revealed significant relationship between naturalistic intelligence, environmental awareness and teaching of science. Another study has highlighted on NI and awareness on sustainable development among tribal students highlighted a positive relationship between the two with the aim of creating benefits at local and global level.

Considering these numerous previous studies the researcher tried to interrogate and investigate about the impact of NI on Pro- environmental Behaviour. Caring for the environment is an attitude that needs attention and empathetically treating the surrounding environment by preserving, repairing and preventing environmental damage should be reflected in daily activities both from the statements of the Behaviour about the environment and also concrete actions. (Oguz, et.al., 2010) Literature review has shown an exploration of various demographic characteristics such as social norms, socio-economic background, different disciplines of study, age are used to predict an individual's attitude towards nature (Brick and Lewis, 2016;) Previous research has examined gender differences in a variety of environmental and Behavioural variables. In the 90's most studies found that women participated more in pro-environmental behaviour. However, Davidson and Freudenburg (1996) claim that gender differences in environmentalism are not universal. Most authors conclude that men have more knowledge about environmental issues than women (Diamantopoulos *et al.,* 2003). These differences may be due to the different socialization patterns of boys and girls (Schahn and Holzer, 1990). Though discrete demographic characteristics such as gender are highly cited as influencers of pro-environmental Behaviour, this influence has yet to be correlated with actual engagement in pro-environmental Behaviour (Ernst et al., 2017). In the present context the researcher has aimed to study if their lies any gender specific influence on the exhibition of pro-environmental Behaviour. Sometimes the type of discipline or the environment-related subjects studied might affect an individual's knowledge of the environment and affect the relationship between beliefs, attitudes and behaviour (Guagnano *et al.*, 1995). Therefore, it makes sense to analyze the possible influence of various streams of study on individual pro-environmental behaviour. The quality and availability of community environmental services play a significant role in determining individuals' participation in pro-environmental Behaviour (Kennedy *et al.,* 2009). Thus, in areas where there are accessible structures, pro-environmental Behaviour will arise much more easily than in areas without structural services (Derksen and Gartrell, 1993). For example, people may be motivated to buy green products but if those products are not offered for sale in an accessible location, they will not actually buy them. Moreover, the lack of easy access to recycling bins might prevent people from recycling and the absence of public transport may require them to use more polluting transportation. In this context the researcher tried to conceptualize the effect of locality and availability of resources on the pro-environmental Behaviour of the students.

In the United States Young adults enrolled in higher education are considered as key drivers of sustainable future (Ernst et al., 2017; Ningrum et al., 2018) As the primary managers of the use of world's future resources understanding the young minds behind the pro-environmental behaviour is essential. As the primary managers of the use of world's future resources understanding the young minds behind the pro-environmental Behaviour is essential. Very few literatures have indicated studies on adolescent age group. As the adolescent period is the doorway to higher education and the key drivers for a sustainable future the researcher has focused on this group of students. Adolescents being associated with various cognitive, physical and psychological changes this research aims to study the relationship of naturalistic intelligence and pro-environmental Behaviour of this age group. Only after understanding the relationship between the naturalistic intelligence and the attitude students have towards the environment and the factors that determine this attitude, one will be able to propose ways of teaching that could further improve the pro-active environmental Behaviour of students. It may throw light on the optimization and innovations

of learning systems about the environment for environmental sustainability by utilizing the naturalistic intelligence of the students.

In this context the present research will try to interrogate, investigate and comment on the link between naturalistic intelligence and engagement in pro-environmental behaviour among adolescent students of the State and accordingly the following objectives were framed.

- To study the status of Pro-environmental Behaviour (PEB) and Naturalistic Intelligence (NI) of adolescent students.
- To study the influence of gender, locality and stream on Naturalistic Intelligence (NI) and Pro-environmental Behaviour (PEB) of adolescent students
- To study the relationship between Naturalistic Intelligence (NI) and pro-environmental Behaviour (PEB) of adolescent students of West Bengal.

Hypotheses

In the context of research background and the framed objectives the researcher navigated the research through the following hypotheses:

H_O1- There will be no significant difference of the status of Naturalistic Intelligence (NI);

- ***H_O1.1:*** *In between male and female respondents*
- ***H_O1.2:*** *In between respondents of Rural and Urban school*
- ***H_O1.3****: In between respondents of Humanities and Science streams*

H_O2- There will be no statistically significant difference of the status of Pro-environmental Behaviour (PEB);

- ***H_O2.1:*** *In between male and female respondents*
- ***H_O2.2:*** *In between respondents of Rural and Urban school*
- ***H_O2.3****: In between respondents of Humanities and Science streams*

H_O3- There lies no significant relationship between Naturalistic Intelligence (NI) and Pro-environmental Behaviour (PEB) of the respondents.

Delimitation of the study: Studies indicate that there are many factors that have a strong influence on pro-environmental Behaviour or environmental awareness of an individual such as knowledge, environmental education, socio-demographic factors, educational status of parents, economic conditions, culture, nature of hobbies (Brick and Lewis, 2016). However, this study is only limited in analyzing the influence of locality, gender and streams of learning on Naturalistic Intelligence and Pro-environmental Behaviour of students.

Method: Quantitative survey method and descriptive study was adopted for the present research being focused in studying the relationship between Naturalistic Intelligence and Pro-environmental Behaviour among adolescent students of West Bengal and the influence of gender, locality and streams of study in each of them.

Population: The population of this study included the adolescents of all schools of West Bengal at secondary level.

Sampling: A sample of 106 students of adolescent age group were selected as respondents of the study Quantitative data was obtained from research instrument in the form of questionnaire obtained from students of selected schools of adolescent age group. The respondent of this research were students of Class XI and Class XII of different streams in schools of both urban and rural region. Comprised students in this study were both male (55) and females (51), the age of respondents being 16 to 18 years of age and their schools being located in Hooghly district, and South 24 Pargana district of West Bengal. Districts of sampling were chosen as per convenience and the schools were divided to rural and urban sectors through probability sampling. The researcher has collected responses from schools of urban region like Sri Aurobindo Vidyamandir for Boys, Chandan Nagar, Charusila Balika Vidyalaya for Girls, Higher Secondary, Baidyabati, and from schools of rural region namely Kalosh Boys High School, Moghrahat, Kalosh Girls High School, Moghrahat.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	FEMALE	55	51.9	51.9	51.9
	MALE	51	48.1	48.1	100.0
	Total	106	100.0	100.0	

Locality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	RURAL	49	46.2	46.2	46.2
	URBAN	57	53.8	53.8	100.0
	Total	106	100.0	100.0	

Stream

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ARTS	55	51.9	51.9	51.9
	SCIENCE	51	48.1	48.1	100.0
	Total	106	100.0	100.0	

Instrument: Information schedule was used to get information about the student's general profile like their age, sex, socio-economic status, place of residence, medium of instruction etc. A standardized scale of naturalistic intelligence developed by Dr. Suraksha Pal and Dr. Surbhi Agarwal and certified by National Psychological Corporation (ISO 9001:2008 certified company) was adopted for the survey. The researcher had developed a scale to assess the pro-environmental Behaviour of students and validated it by three experts. From the total sample of study, response from 60 respondents were randomly selected and reliability of the tool was checked through Split half technique. The obtained value being 0.864, reliability was accepted. The instrument for assessing pro-environmental Behaviour had four dimensions with a total of 30 items. (Dimension 1/D1= Conservation and restoration having eight items, Dimension 2/D2= Environmental altruism having six items, Dimension3/D3=Promoting environmental awareness having 8 items, Dimension4/D4= Environmental attitude also having eight items) The format of the questionnaire of assessing pro-environmental Behaviour was chosen after consultation with a number of research questionnaires from web. Some items were derived from previous studies while other items

were designed in accordance with the current situation. Items were framed in five-point Likert Scale (Strongly agree, agree, neutral, disagree, strongly disagree).

Data analysis: Descriptive and inferential statistics are made through analyzing the quantitative questionnaire. Results were interpreted on the basis of category variables and how they influenced Naturalistic intelligence and environmental Behaviour.

Data analysis was done both with Microsoft Excel and SPSS program version 22.00. The Shapiro-Wilk's Test had been done to test the normal distribution of data quantitatively. Analysis included finding of correlation of the two variables, Independent Variable (Naturalistic Intelligence) and Dependent variable (Pro-environmental Behaviour). Correlation coefficient was obtained to see the size and strength of relationship between naturalistic intelligence and pro-environmental Behaviour Spearman's ρ (a non-parametric correlation coefficient) was used to test the null hypothesis $H0_3$. The assumptions of relationships between students' NI and PEB are represented in tables and scatter plots. The researcher had also analyzed the significant difference in mean value between the Pro-environmental Behaviour and Naturalistic Intelligence through non-parametric Kruska-Walli's test. The probable cause of findings from each category was also analyzed and justified through discussion based on the findings.

RESULTS AND INTERPRETATION

Table 1: Distribution of data

Descriptive Statistics

Variable/Factor	N	Min. Score	Max. Score	Mean	SD	Skewness	Kurtosis
NI	106	30	43	37.29	2.87	-0.08	-.68
PEB	106	95	113	103.25	4.39	-0.19	0.72

Testing of Hypotheses

Normality Test

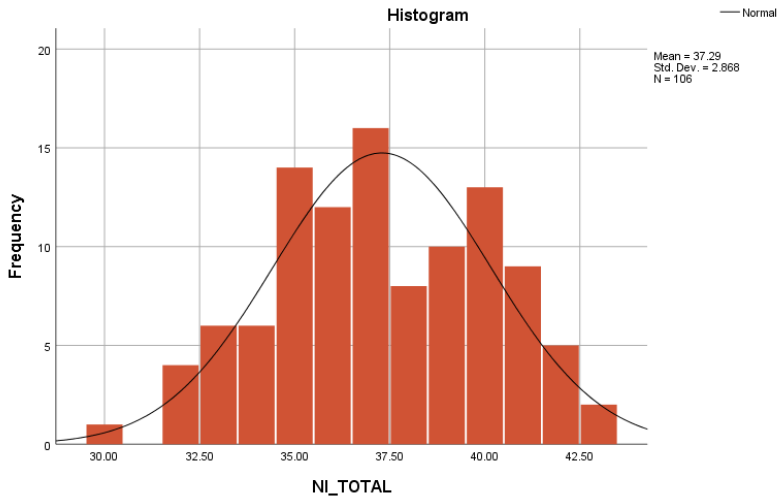

Figure 1: Histogram showing the data distribution of NI

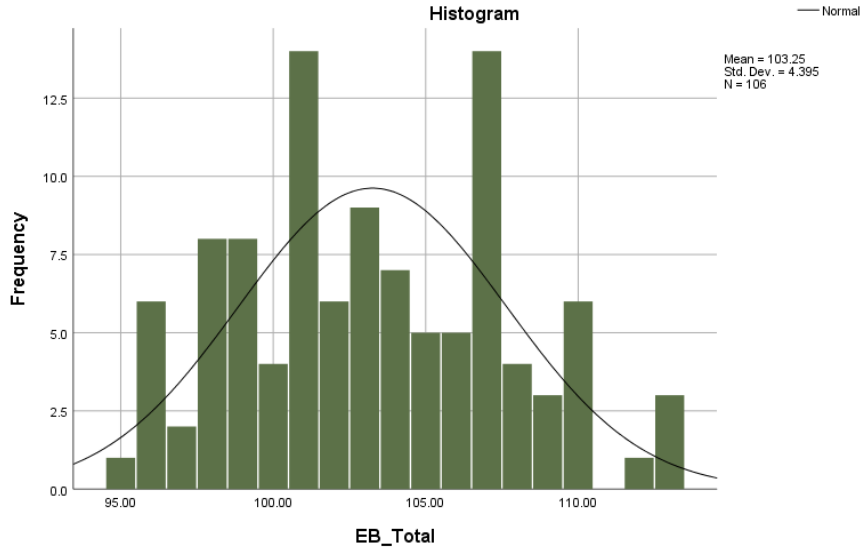

Figure 2: Histogram showing the data distribution of the PEB

Table 2: Details of the Normality Test (Shapiro-Wilk's Test)

Variable	Test Statistics	*df*	Sig. Value	Decision
NI	.98	106	.04**	Normality Rejected
PEB	.97	106	.02**	Normality Rejected

********Significant at 0.05 level*

The Shapiro-Wilk's Test (Table 4.6) has also been done to test the normal distribution of data quantitatively. All the values have come out as significant at 0.05 level. As a result, it is also found that the data distributions consistently fail to conform to their normal distribution. Though the skewness and the kurtosis values are quite normal, still, the nature of the data reveals:

a) The histograms (Figures 4.4 to 4.7) showed much more scores deviated from the normal distribution curve and the datasets have some outliers.
b) The Shapiro-Wilk's Test (Table 4.6) also rejects all the data of their normal distribution.

Therefore, it confirms here that the data for NI, as well as the data of PEB are not normally distributed. In such a situation, for inferential statistics, in each case, the non-parametric test is employed. The threshold level for significance has been considered here as 0.05 ($p<0.05$).

Analysis of Data Pertaining to Hypothesis $H0_1$ to $H0_3$

$H0_1$

Table 3: Influence of Gender on NI

Hypothesis	Variable/Factor	Category	N	Mean Rank	Kruskal-Wallis H	*df*	p-value
$H_O1.1$	NI	Female	55	60.61	6.18	1	**0.01***
		Male	51	45.83			

***Significant:** Significant difference between female and male

Table 4: Influence of Locality on NI

Hypothesis	Variable/Factor	Category	N	Mean Rank	Kruskal-Wallis H	*df*	p-value
H_O1.2	NI	Rural	49	63.66	10.07	1	**0.00***
		Urban	57	44.77			

***Significant:** Significant difference between rural and urban

Table 5: Influence of Stream of study on NI

Hypothesis	Variable/Factor	Category	N	Mean Rank	Kruskal-Wallis H	*df*	p-value
H_O1.3	NI	Arts	55	56.19	0.89	1	0.38
		Science	51	50.60			

No significant difference between Arts and science

$H0_2$

Table 6: Influence of Gender on EPB

Hypothesis	Variable/Factor	Category	N	Mean Rank	Kruskal-Wallis H	*df*	p-value
H_O2.1	PEB	Female	55	56.66	1.27	1	0.27
		Male	51	50.09			

No Significant difference between female and male

Table 7: Influence of the Locality on EPB

Hypothesis	Variable/Factor	Category	N	Mean Rank	Kruskal-Wallis H	*df*	p-value
H_O2.2	PEB	Rural	49	48.28	2.65	1	0.10
		Urban	57	57.99			

No significant difference between rural and urban

Table 8: Influence of the Stream on EPB

Hypothesis	Variable/Factor	Category	N	Mean Rank	Kruskal-Wallis H	*df*	p-value
H_O2.3	PEB	Arts	55	52.35	0.16	1	0.69
		Science	51	54.74			

No significant difference between Arts and science

$H0_3$

Spearman's ρ (a non-parametric correlation coefficient) was used to test the null hypothesis $H0_3$. The assumptions of relationships between students' NI and PEB are represented in the following tables and scatter plots both.

Table 9: Relationship between Naturalistic Intelligence and Pro-environmental Behaviour

Factor	N	Mean	SD	Spearman's ρ	Level of Sig.
Naturalistic Intelligence	106	19.34	2.80	0.26	**0.00****
Pro-environmental Behaviour		24.39	3.45		

**** Significant at 0.01 level**

Correlations

			NI_TOTAL	EB_Total
Kendall's tau_b	NI_TOTAL	Correlation Coefficient	1.000	-.033
		Sig. (2-tailed)	.	.643
		N	106	106
	EB_Total	Correlation Coefficient	-.033	1.000
		Sig. (2-tailed)	.643	.
		N	106	106
Spearman's rho	NI_TOTAL	Correlation Coefficient	1.000	-.038
		Sig. (2-tailed)	.	.702
		N	106	106
	EB_Total	Correlation Coefficient	-.038	1.000
		Sig. (2-tailed)	.702	.
		N	106	106

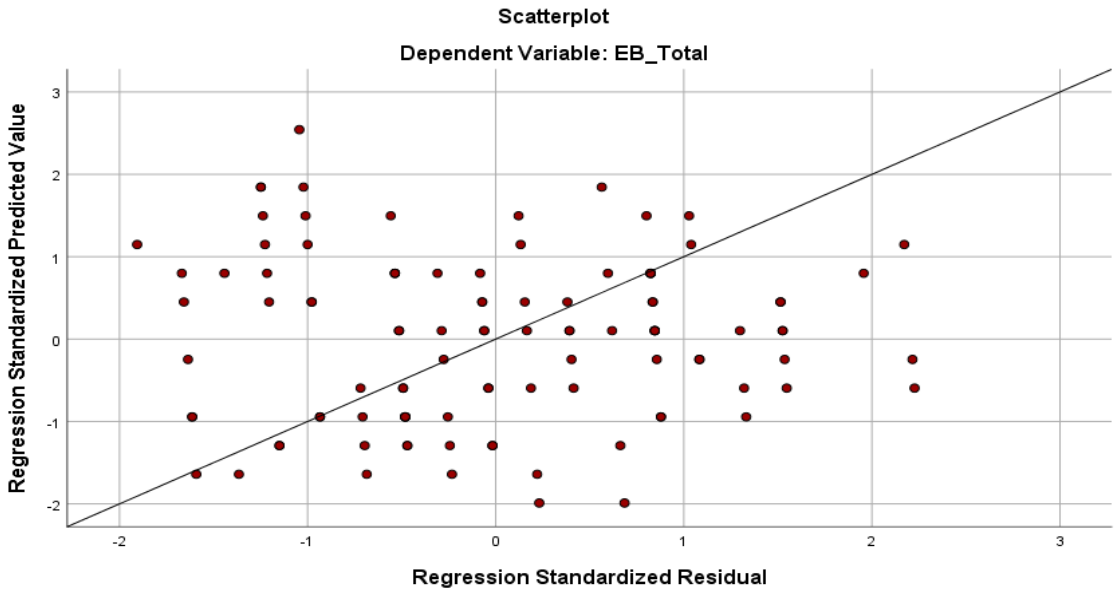

Figure 3: Scatter Plot for the correlation between students' NI and EPB

The Spearman's rho correlation analysis is tabulated (Table 4.7) here to show the relationship between students' NI and EPB. The distribution pattern of the data is also illustrated in the scatter plot (Figure 4.9). The mean and SD for Naturalistic Intelligence are 19.34 and 2.80, and the mean and SD for Pro-environmental behaviour are 24.39 and 3.45. The correlation coefficient (**ρ**) has come out to -0.04 which is statistically insignificant at 0.05 level (p=0.64). Hence the null hypothesis $H0_3$ is accepted and it can be said that no significant relationship was prevalent between NI and PEB of the adolescent students of West Bengal.

DISCUSSION AND CONCLUSION

Gender Based Influence on NI and PEB:

Results reveal significant gender specific difference in Naturalistic intelligence among the adolescent students but no significant difference in the exhibition of environmental behaviour is observed. The mean rank of Naturalistic Intelligence is greater in females

(60.61) than the mean rank of males (45.83) Thus it can be concluded from this study that gender had played a significant role in the Naturalistic Intelligence of an individual but not in the exhibition of environmental behaviour. Many previous studies have revealed that there is a strength and significant correlation between the naturalistic intelligence with environmental awareness among students. The students who are having interest in flora and fauna, understanding the environmental problems, enjoy outdoor activities, have scientific hobbies and concerned to the change of environmental will also have a high awareness of the environment. The naturalistic intelligence of the students possess also develops a positive attitude toward the environment and directs the students to have a pro-environmental Behaviour. Thus, it may be speculated from this study that female students having higher naturalistic intelligence (NI) may exhibit greater environmental behaviour. Previous studies have revealed that women and men do not experience environmental and climate change in the same way. Literature shows that women, particularly in rural areas, present greater concerns about environmental changes since they carry out activities such as raising children, or planting and harvesting, which depend largely on both natural resources and a healthy environment (Blocker and Eckberg,1989; Davidson and Freudenberg, 1996; Vicente-Molina et al., 2018). It may be so that a higher naturalistic intelligence may help them to take domestic decisions easily that have environmental implications in daily household activities. For example, decisions like buying eco-friendly products, waste management and segregation may be easily taken by women. They may exhibit much more pro-environmental Behaviour due to their innate tendencies of sensitivity, tolerance and understanding of the environment (Zelezny et al. 2000) study gender differences across 14 countries and find significant gender differences in environmental attitudes and Behaviour patterns within countries, with women being consistently more pro-environmental than men. However, (Davidson and Freudenburg 1996) claim that gender differences in environmentalism are not universal. Most authors conclude that men have more knowledge about environmental issues than women (Diamantopoulos et al., 2003). These differences may be due to the different socialization patterns of boys and girls (Schahn and Holzer, 1990).

However, the recent study indicates no gender-based difference on pro-environmental behaviour. It might be so that both male and female students are well aware about their environmental responsibilities and duties and exhibit the same type of Behaviour (Erharbor, N. and Don. J, 2016) have conducted research on Impact of Environmental education on the Knowledge and Attitude of students towards the environment and the findings of the experimental study revealed that there is a high level of knowledge and positive attitude towards the environment among the students. This study revealing the same concern, responsibilities and attitude towards environment for both male and female students might be because of learning of environmental education as a separate discipline since childhood which had an impact in the exhibition of environment friendly behaviour of students irrespective of their gender. It might be that the pro-environmental behaviour is instilled in the young lives right from childhood through parental and school education which has reflected later as an outcome in adolescent period thus bridging the gap and the gender specific differences in exhibition of such behaviour. Research in environmental psychology has documented the significant role that parental pro-environmental behaviour has in their children's Behavioral outcomes. (Grønhøj and Thøgersen 2009) found a positive relationship between parents' and children's pro-environmental behaviours, including purchasing green products, conserving energy, and sorting waste. Grønhøj and Thøgersen (2012) further demonstrated that parents could transmit their values, beliefs, and behaviours

to their children. Parental education can be one of the major reasons of exhibition of pro-environmental behaviour among the adolescent students irrespective of their gender.

Locality Based Status of NI and PEB: This study reveals significant difference in Naturalistic Intelligence (NI) among the rural and urban students with rural students having greater mean (38.22) than the urban (36.49) students. Again, no Significant difference is observed in pro-environmental behaviour among the urban and rural students. It might be so that the students from urban schools in spite of having lower naturalistic intelligence than the students of rural schools do exhibit the same pro-environmental behaviour because maybe they are more exposed to environmental degradation and must have heard about environmental problems more. Students of urban area are more exposed to pollution and environmental crisis which shapes them to environment conscious and environment aware individuals since childhood. This finding is parallel and supportive with the research findings of (Duroy 2010) where it has been inferred that in urban areas the influence of media is quite high and environmental problems are highlighted. It may be that students of urban and rural areas are familiar with the crisis of environment through various media networks like easy access to internet etc. The findings of the study of (Wang, et.al. 2022) inferred that urbanization can directly influence PEB and the four dimensions of urbanization (economic, social, spatial and population urbanizations) can influence PEB in different manners. Economic urbanization can positively influence private PEB; social urbanization exerts a slightly positive impact on PEB; spatial urbanization has a notably negative impact on PEB while population urbanization has no significant effect on PEB. On the contrary of this result, the study by (Budak, et al. 2005) revealed that rural students were more concerned about environmental issues than urban ones. Thus, there lies different views regarding the influence of locality on environmental behaviour. The results of this study indicate that though students of rural schools have higher naturalistic intelligence, yet they exhibit the same pro-environmental behaviour. This indicates that simply having naturalistic intelligence does not ensure environmental awareness in the young minds. It means that simply becoming aware about the plight of the environment does not mean that a person will act in an environment friendly manner. The reason of exhibition of same pro-environmental behaviour in spite of having differences in naturalistic intelligence should be addressed.

In the light of the above results, it can also be predicted that the education system both school education and parental education can play a vital role and be a powerful medium to ensure protection of environment and can train and educate the students especially of rural areas to indulge themselves in eco-friendly behaviour. Women and mothers as the important educators of children may have stimulated change in behaviour that may have led to savings in food, water, energy consumption and ultimately in the exhibition of eco-friendly behaviour. Also, teachers being the mediators of change in every society, may have played a crucial responsibility to help generate the broad social context necessary for ecologically sustainable development. Media might be one of the crucial factors in modern times in spreading environmental awareness among young learners that might have enlightened both the urban and rural students equally. Television, print media and social media are powerful tools in educating public on environmental issues. Newspapers, Journals magazines play crucial role in providing relevant information with required facts and pictures to community. In modern times social media also pose to be an active platform of certain global environmental issues. These might have instilled in young learners the necessity of environmentally friendly behaviour irrespective of locality. Study by (Hamid, et al., 2017) revealed a positive impact of media on environmental awareness of university students and

staffs. Similar role of media was observed in a study of (Jherotia et.al., 2018). Previous studies have revealed that people who have satisfied their personal needs are more likely to act ecologically because they have more resources (time, money, energy) to care about bigger, less personal, social and pro-environmental issues. In the light of this study, it can be concluded that with advancement of time and progress and development government have taken sufficient steps and initiatives to satisfy the personal needs and demands of each rural family so that the children have a positive mindset to think about environmental issues equally like the urban students. Though there lies an apparent difference on the basis of locality in naturalistic intelligence but the gap in exhibition of environmental behaviour is perhaps bridged through proper environmental education and awareness.

Influence of different Streams of learning on NI and PEB:

Sometimes the type of discipline or the environment-related subjects studied might affect an individual's knowledge of the environment and affect the relationship between attitudes, beliefs and behaviour (Guagnano et al., 1995). A study of university students from 14 different faculties in Ankara (Turkey) concluded that most of those who were studying environment-related subjects were from the social sciences (Talay et al., 2004). Therefore, it makes sense to analyze the possible influence of social science disciplines on individual pro-environmental behaviour. There are studies which indicate that Students of certain academic fields show a better understanding of environment and climate changes. Several authors (Tikka et al., 2000; Spellman et al., 2003; Pe'er et al., 2007; Diaz MF, 2020) found that students from disciplines related to environmental and natural sciences possess a significantly higher level of environmental knowledge, attitudes and behaviour than those from other programs. In the study of (Hidaya and Augustin 2017), Pro-environmental behaviour of science students was compared to non-science students and the results revealed greater pro-environmental behaviour for science students since environmental topics were discussed in science classes with complete involvement of students.

However, the analysis of the results of the present study highlights no difference in Naturalistic Intelligence (NI) and Pro-environmental Behaviour (PEB) among the students of different streams of learning. Results indicate that students from both the streams exhibit same pro-environmental behaviour. It can be stated that they possess the same sensitivity, certain practiced or learned behaviour and some innate consciousness to act in the interest of Environment and Nature and such learning can also be related to parental education and school education since childhood. Students of modern times in West Bengal specifically study environmental Science as a separate discipline in school curriculum since childhood which has several unit or course based on Environmental education. It might be so that background of such inputs of the course have self-driven or motivated them to practice such green behaviours.

Relationship between Naturalistic Intelligence and Pro-environmental Behaviour:

Naturalistic intelligence being a new addition to the multiple intelligence theory and a skill that helps a person in recognizing and understanding nature includes sensitivity towards natural phenomenon. A person possessing naturalistic intelligence and continuing to develop it will be able to maintain the environment and know the consequences of his actions to nature (Armstrong et.al, 2009). Therefore, it is necessary to ensure that naturalistic intelligence will contribute to positive environmental behaviour. Another study has focused on relationship is between NI and Sustainable development among tribal students at secondary level. A similar study (Karupagam et.al, 2014) investigated the influence of

Naturalistic Intelligence and Environmental behaviour on teaching science among school teachers in which the correlation test revealed that there is a significant relationship between the two. However, the present study has highlighted a very weak positive relationship between the naturalistic Intelligence and pro-environmental behaviour.

It might be so that NI was not the only factor that have directed the pro-environmental behaviour of students. There might have been other factors educational status of parents, media exposures, cultures that may have influenced Behavioural outcome. However, these needs further investigation. (Janis.et.al, 2016) have conducted research on Impact of Environmental education on the Knowledge and Attitude of students towards the environment and the findings of the experimental study revealed that there is a high level of knowledge and positive attitude towards the environment among the students. Also, it was observed that the relationship between their knowledge and attitude towards the environment is negative, showing little or no relationship. Similar insights to this study can be concluded about the impact of environmental education on the young minds through curriculum in directing the behaviour of students irrespective of their naturalistic intelligence. However, the researcher recommends that more needs to be done to promote and encourage EE at all levels in the country especially by the government and its agency to ensure effective implementation.

Limitations

There are several limitations that should be considered before these results are generalized. First, the subsamples were taken from a limited number of schools from each locality. This implies that they might not reflect different situations that may exist in each place, so the results cannot be generalized or cannot represent the entire age group or all the adolescent students. Secondly, although the sample comes from different schools of different localities and students representing different streams of study, generalization to other cultures may be problematic and more future research needs to be done so that the conclusions can be applied with different socio-economic characteristics. The study was restricted only to the schools of West Bengal and was confined only with the adolescent group of students. Other age groups were not taken into consideration.

However, this analysis may be sufficient for the purpose of looking for differences at a glance in the exhibition of pro-environmental Behaviour and the improvisation and reframing that needs to be done in the school curriculum in order to inculcate the environmental values from childhood.

Implications and Future Scope

The present study reveals a weak relationship between naturalistic intelligence and pro-environmental behaviour with gender based and locality based significant difference in NI among adolescent students of West Bengal. However, difference in exhibition of pro-environmental behaviour is not observed among the socio-demographic variables. Thus, the influence of NI on PEB further needs to be interrogated. The research can contribute to the optimization of campus management and learning systems about fostering more of environmentally friendly behaviour by utilizing the Naturalistic intelligence of students. Cultivating pro-environmental behaviour and having eco-sensitive attitude is critical and may well be the deciding factor for survival in planet. In every scenario, irrespective of the behaviour exhibited by young generation, it is quite imperative and vital that proper training should be given to young students to be alert and responsive to environmental concerns so

that they behave appropriately in favor of our planet. As noted in this study the subsequent relationship between intelligence and exhibition of environment friendly behaviour is complex and even can be unrelated at times, so the integration of both subjective and objective environmental knowledge at all levels should be addressed by all educational Institutions even if it is a challenge. Though apparently it seems that increasing objective knowledge might be a way for educational Institutes to improve pro-environmental behaviour in advanced countries, this measure does not seem to be worth applying in emerging countries. In the light of the results of this study and previous research conducted it can infer that curriculum framing and choosing pedagogical inputs to include in schools is a vital task and including concepts and elements of Pro-environmental behaviour into school curriculum and text books would certainly give huge impetus and ensure that future generations would be able to live responsibly and sustainably. Thus, framing a complete and meaningful curriculum could be another implication of this study. In a recent study of (Priardi, et.al.,2024) the development of Naturalistic Intelligence in early childhood through environmental education has been highlighted. Educators being the role players in shaping the minds and personalities of the young generations, they themselves need to master the concepts of pro-environmental behaviour so that they may be able to nurture a new generation of citizens who act sensitively and sustainably. Teacher is the key factor in all educational development hence there is need to develop professional competencies and determination of best performance of teachers at each level of education. If they themselves are well versed with environmental issues, they can assure more effective transmission of environmental messages to children. In this context the government may arrange more of orientation programs and competency development programs in teacher education Institute and for all school teachers in the upcoming future.

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